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THE BIOLOGIST

THE OFFICIAL ORGAN OF THE PHI SIGMA HONORARY
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The Value of an Organization Like Phi Sigma to a College.

M. A. Crysler, Delta.

This is an age of organization, and the person who does not belong to at least a few societies is as much out of the world as the "Man without a Country." Societies such as Phi Sigma are expressions of our genius for organization, and are of value to an institution as well as to the members of the society.

From the point of view of the members it is plain that the society increases their respect for the subject when they see that they form part of a national organization which exists for the promotion of biological knowledge and the cultivation of friendly relations among biologists. Of much value is the encouragement of good scholarship among junior students who hope to make themselves eligible for membership in the society. A good programme committee can do much toward widening the biological interests of the members by securing addresses on biological topics which though important do not fit in well with the regular courses. The advantage of practice both in filling official positions and in preparing and delivering addresses will be appreciated later in life by all the members.

Besides the profit derived by the members of a society there is a reaction on the department just as certain though not perhaps so evident. There is no doubt that a department receives a good deal of free advertising through the activities of Phi Sigma, and when these activities extend to the public, the institution profits as well as the department. One of the best things that ever happened to our department was the "Biology Day" so creditably and successfully carried through by Phi Sigma.

When To Begin.

Dr. O. C. Glaser, University of Michigan.

No question is discussed more frequently by those interested in scientific research. Concretely, it presents itself whenever students apply for work of this character. In

• less tangible form it flits about the interminable discussion in which "culture," "specialization," "over-specialization," and other terms dear to the pedagogue, play so large a rôle.

Like many questions it answers itself when properly put. Instead of asking when to begin, let us inquire why do we stop?

The normal child, equipped with all its senses, is endowed with a resistless impulse to use them. By the very nature of things the air it breathes is charged with the spirit of research. The nursery floor all but sags under the weight of castles and bridges built and rebuilt until every capacity inherent in blocks has been tested and tried. Even then matters can be examined from an unusual angle. By standing on our heads we may discover new possibilities in tables and chairs. Upside down, the one can be used as a coracle, the other, in a lying posture, makes an excellent aeroplane. Nor do we resist the allurements of the wall. It can be patted—patterned even—with the hands; bumped by head, it emits a variety of rumblings, and scratched with the aid of an uncensored pencil, it receives and retains marks as nicely as books and paper. Also it can be licked with secret satisfaction. And finally there are remarkable experiments with words—the efforts of imitation—the success in concocting elaborate bits of nonsense which at times bring us exactly what we want—at others, produce effects in no wise to be foreseen.

The child is a born investigator. By methods and impulses all its own, it discovers, analyzes and interprets bit by bit the world in which it lives. It knows no authority except experience. It is doubtful even whether the domination of its elders is realized in any other way than as an obstacle. Why then do so few remain true to the searching spirit of childhood?

It is not because nature is exhaustible. It is not because we lack the necessary instincts. I can find no explanation except the stupidity of our methods.

The ordinary adult has an aversion to inquiries. The questions of children interfere with the even tenor of

parental thoughts—supposing for the moment there are any. Interruptions while reading the daily rubbish in the newspapers are resented. Suppression is the staff of life. In school also questions are out of place. We must not make ourselves obnoxious. We must learn—learn to repeat—until by the teacher's own confession we outdo the cleverest of parrots. In the end we attend the University and in due time make our contribution to the growth of knowledge.

Before this is permitted however, we must be further "educated." The teaching is distinctly better than before. Still, undergraduate classes are disastrously large. Little in the way of individual attention is possible. Our information comes to us, not as a thought provocative so much as in the shape of encapsulated dogmas—many of them not overnew. We are apt furthermore to be treated as imbeciles and to find the professors busy.

No one is likely to have had all these experiences. All of us however, have had some of them. The fewer we have had, the more likely are we to have retained primitive impulses. These are the raw materials from which investigators are made.

The answer to our question then resolves itself into this: There is no inherent reason why we should ever stop. It is not implied that the discoveries of children may be expected to increase the common stock of knowledge. We have no right to expect this, as a rule, even from the later stages of adolescence. The work of our predecessors has been no child's play and is entirely too voluminous to render chance additions likely. Yet the spirit which produced this work may and should be kept alive while we acquire what has been done. This does not mean simply erudition. The merely erudite are not masters but mastered. Real mastery, which means orientation, leaves the mind richer in questions than answers. And the questions—like a swarm of flies, give the survivor of our educational crimes no peace. This situation, whenever it may come about—the earlier the better—is the signal that rightly interpreted tells us "when to begin."

Historical Sketch of Epsilon Chapter.

E. H. Stewart.

In one sense of the word Pi Beta Omega was always more or less of an assistant's club for nearly all of its members have at one time or another been assistants in the department of biology, and one of the principal things that it has tried to do has been to stimulate the undergraduate students of the department to be doing a good standard grade of work in their courses.

While the fraternity has always done some scholastic work within its own ranks it has been one of its principle aims and duties to provide instructive and entertaining programs for the Biological Society, an organization of some thirty or forty members that meets once a month. Membership in this society being open to nearly all who have had ten hours work in the department.

On December 19, 1912, Prof. Cutler with his three assistants and one other student met in the lecture room of the biological department and considered the proposition of organizing an honorary biological fraternity as none were known to exist elsewhere.

The various emblems of the organization, such as the pin, flower, colors and motto were soon chosen and the standard for admission established. On January 7, 1913, the organization was announced to the University.

During the summer of 1913 a charter was granted by the State of Colorado.

During October of 1913 some correspondence was carried on with Colorado College, the University of Colorado, the University of Wyoming and the University of Nebraska with the view to establishing chapters at those institutions. None of them came to any head but there seemed to be a favorable attitude towards the proposition especially at the University of Wyoming, on the part of Dr. Aven Nelson who is an alumnus of the University of Denver and the author of Coulter and Nelsons Manual of Rocky Mt. Botany.

During December of 1914 the fraternity presented a pennant to each social fraternity at the college of Arts and

appealed to them for their influence in producing a higher standard of scholarship at the University.

During the first few months of 1915 an investigation was carried on among some 50 colleges over the country in an effort to locate other biological fraternities if any such existed. Several such organizations were found but no attempts were made to unite with any of them.

In the early part of 1916 communication was opened up with the Phi Sigma Society of Ohio State University which came to a conclusion by the establishment of the Epsilon Chapter in 1917.

The Medullary Rays of Cedrus.

Abstract of paper by M. A. Chrysler, Ph. D., University of Maine.

The wood of the cedar of Lebanon and other true cedars shows peculiar pith-rays, in that marginal cells may or may not be present. When present these cells may be tracheids or parenchyma, the latter occurring chiefly at the limit of annual rings. The evidence goes to show that the marginal cells are in a degenerating condition, and this suggests that the genus *Cedrus* belongs in an intermediate position between *Pinus* and *Abies*, a conclusion already drawn from other evidence.

Abstract.

Wallace Craig, 1916.—Synchronism in the Rhythmic Activities of Animals. Science, N. S. 44, 748-786.

Wallace Craig, Ph. D., University of Maine.

Human beings very easily keep time with a rhythm which they perceive by sight or hearing, as in marching or dancing. This power has never been proved to exist in animals. Some scientists state that they have observed such behavior in animals, but their observations are carelessly described, and it seems certain that some of the synchronism they observed was mere illusion. The only cases in which animals are surely known to exhibit such syn-

chronic rhythms are cases in which the animal's muscles are acted upon by the object with which it keeps time; as, when a canary swings on a swing perch, a spider swings on its web, or a group of phalangiers with legs interlocked swing in synchronism with each other.

Further Notes on the Chromosomes of the Cercopidae.

(Biol. Bull. XXIX, 5, 1915).

Alice Middleton Boring, Ph. D., Delta and R.H. Fogler.

The chromosomes in the spermatogenesis of five species of this family of Hemiptera have already been studied by Stevens and Boring. Three more species have now been studied in comparison with those previously studied. These are *Philaenus lineatus*, *Aphrophora parallela* and *Clastoptera proteus*. Each of these species belongs to a genus in which one or more species have already been studied, so this gives a chance to compare the spermatogenesis in closely related species. This has been done very carefully by McClung for some families of Orthoptera. The entire family Acrididae has the same spermatogonial chromosome number, 23, and the Locustidae has 33, but within each family there are generic and specific cytological differences. The family Cercopidae of the Hemiptera does not show as closely graded a series of cytological differences as the orthopteran families studied by McClung.

Philaenus lineatus has 15 as the reduced chromosome number, one being larger than the others. *Aphrophora parallela* also has the same reduced number (15) and size relations. *Clastoptera proteus* has its reduced number of chromosomes as 7.

The eight species of Cercopidae in which the spermatogenesis has so far been studied belong to four genera. The chromosome number (reduced) varies from 7 to 15. The chromosome number seems to have no significance for family or genus.

The old chromosome in the spireme stage differs in its shape in the genus *Aphrophora* from that in the other genera as far as studied. It is a much elongated structure

early in its appearance in Aphrophora, while it first appears as an oval or round body in the others.

All eight species of the Cercopidae studied show a typical odd chromosome, which divided only in the second spermatocyte division. In all of the species except Aphrophora quadrinotata and Clastoptera proteus, in which the material was limited and the equatorial plates consequently not studied in favorable positions, there is one chromosome among the reduced number which is distinctly larger than the others. In no case is the odd chromosome the largest one.

Alpha

Recent initiates of Alpha Chapter are Forest W. Dean, graduate assistant in the department of Botany; Walter W. Randolph, senior in the College of Arts; Jasper D. Sayre, senior Arts; William P. Smith, D. O., assistant in Anatomy and junior in Medicine.

The Chapter celebrated Founder's Day on March 17th with a dinner at "The Mission Tea House" followed by a discussion by Mr. Knouf of the research work of the department of Anatomy conducted by himself and others. Guests of honor were Prof. Herbert Osborn, Prof. Landacre and Prof. Transeau.

On April 10th there was exhibited for the benefit of the public under the auspices of the Chapter, a film entitled "How Life Begins." This is a four reel presentation in a simplified but scientific manner of the processes of reproduction in lower forms and diagrammatic representations of the principles involved. It is offered as a suggestion that the other Chapters might find it profitable to exhibit this film. It may be rented from the Exhibitor's Booking Agency of New York.

Miss Mabel Stehle was recently honored by election to Phi Beta Kappa.

Delta Chapter.

Maurice Jacobs.

Patriotism reigns supreme with all the Phi Sigmas at Maine. Every man has enrolled in the hospital corps, and

every woman in the Red Cross. We all are training to do our little share for the country.

Since our last writing, three new men have taken the Phi Sigma bond, Messers. McCusker, Eddy and Merrill. The latter two are enrolled at Harvard and Harvard Medical respectively, and were members of the old Biology Club.

Phi Sigma held her first open meeting on April 4, with Dr. Chrysler as the speaker. The subject "Man's Place in Nature" proved very interesting and instructive to the large audience.

We are to lose most of our organization in June, but the enthusiasm displayed by the remaining few is sure to rebuild us again in the fall with new vigor and strength.

Personals.

Joseph A. McCusker, one of our new members, is President of the Senior Class, and member of the honorary societies, The Sophomore Owls—the Senior Skulls. He has proved to be one of the hardest workers in this department and university.

Emery E. Eddy, also a new man to Phi Sigma, attained the honor of being the only undergraduate in the Research Club while at Maine. He was also a member of the scholastic fraternity, Phi Kappa Phi. He is studying at the Bussey Institute of Harvard for his doctor's degree.

Earle S. Merrill was awarded the valedictory last June and also the honor of Phi Kappa Phi. He is doing very well at the Harvard Medical School.

Miss Grace Gibbs was awarded the Phi Sigma scholarship by recent decision of the department faculty. This scholarship entitles the owner to a summer's study at the Maine Biological Laboratory at Woods Hole, Mass.

Miss Elizabeth Bright has been appointed to the position of technician in the Department of Physiology of Harvard Medical School. After a summer's work at Wood's Hole, she will assume her duties in the fall at Harvard.

Henry A. Peterson, our president, is to go to Medical

school next fall. Either Harvard or Johns Hopkins is to be the choice.

"Park" Moulton, who is always announcing somebody's engagement, has at last passed around the "smokes."

Donald S. Welch has been appointed assistant geneticist to Dr. Blakeslee at the Carnegie Institute of Washington, Station for Experimental Evolution, at Cold Spring Harbor, Long Island, N. Y.

Epsilon Chapter.

The installation of Epsilon Chapter was held on March 5th. Prof. Cutler was officially delegated to conduct the installation ceremonies. The Chapter immediately began to prepare for the addition of new members and for the duties incumbent upon a Chapter of Phi Sigma.

E. H. Stewart has withdrawn from school for the remainder of the year and is located at Mesa where he is engaged in stock raising. He expects to engage in field work in botany and paleontology during the coming summer but will return to school next year to complete work necessary for the degree of A. M.

Extension Progress.

During the past few months the President has had correspondence with various persons interested in biological work in the University of Wisconsin with a view to establishing a Chapter of Phi Sigma in that institution. As a result of these activities we are glad to announce that there has recently been received a petition from The Lapham Biological Society and is now under consideration at the hands of the Chapters.

Mr. Hambleton, an alumnus of Alpha, gives a very high recommendation to this group and urges the acceptance of the petition. The petition contains the names of thirteen men engaged in advanced work in the departments of Botany, Zoology, Experimental Breeding and Plant Pathology. There are, in addition, twelve other biological de-

partemnts not at present represented in the membership of the society so that there should be an abundance of material for the maintenance of a Chapter.

The Grand President's Page.

The Phi Sigma Society has now completed its first year as a national organization and we may with profit engage in some reflections in retrospect. Handicapped by the absence of the Secretary-Treasurer from the very beginning, the President, rather than impose the additional work upon someone else, has attempted to carry out these duties in addition to those regularly falling to his office; with what success may best be judged by others.

These additional duties, with an already full schedule, has made necessary the neglecting of some very important matters, that others more important might receive some small measure of proper attention. The growth of the society has been more rapid than the development of the administrative organization. There are many imperfections and many weak places in the organization and there is yet much to be done.

The Chapter charters and the membership certificates should have been prepared long ago but the members of the committee in charge of designs have been compelled to give attention to these matters only when they could borrow time from regular duties.

A satisfactory system of records is only just now being tried out. The revision of the Constitution is under way and it is hoped that it will be possible to present the revised product for the consideration of the Chapters ere this page reaches its readers. Thus it is apparent that there is much to be done in the way of completion of the organization.

I wish to take this opportunity of expressing appreciation for the support and co-operation that the Chapters have given this office. But I want to urge upon the Chapter of-

ficers and members the necessity for even better co-operation and support for the new officers soon to be elected. Their duties have grown apace and they are not familiar with the working of the organization.

To be more specific, you should take pains to report new initiates promptly and send in all fees when due without waiting to be reminded of it by the Treasurer. And if the society votes to continue the publication of *The Biologist*, the Chapter Editors can do a great deal to facilitate the work of the Editor by reporting personal news regarding any of the members or alumni, abstracting publications, securing subscriptions and sending in material for publication as soon as collected.

Then there is the question of the attitude of the alumnus. Already we find that some of our number who were active and valuable members are almost lost to us as alumni so far as aid and interest are concerned. Those who go out at the end of this year must decide for themselves whether they are going to become members of this class or whether they are going to come into the class—fortunately the larger one—of alumni who are always on the alert for an opportunity to aid and benefit the society devoted to the interests of science. There are many schools in which a chapter of Phi Sigma would flourish and do a great deal of valuable work in the advancement of scientific effort. All that is necessary is for the resident alumnus to stir up a little enthusiasm and try to corollate the efforts of the workers. The establishment of the Chapter should then be inevitable.

Then there is always the question of the scientific attitude of the members. No amount of constitutional restriction can produce this; no rules and regulations can enforce it. It must be born of the genuine unselfish desire to add to the world's store of beneficial knowledge. Without this desire, the Chapter cannot but become a figurehead and a travesty upon the ideals of its founders.